

216114US2SDIV

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF :
SOICHI INOUE ET AL : GROUP:
SERIAL NO.: NEW APPLICATION : EXAMINER:
FILED: HERewith :

FOR: PATTERN FORMING METHOD
AND PATTERN FORMING
APPARATUS

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

SIR:

Prior to examination on the merits, please amend the above-identified patent application as follows:

IN THE SPECIFICATION

Please rewrite the specification as shown below.

Please replace the following paragraph beginning on page 1, line 24, with the following text:

--Consider the case of forming a device pattern by first forming a master mask (a photomask, an X-ray mask, an electron beam mask, an ion beam mask, etc.) for the device pattern using a mask writing tool (which writes a pattern with an electron beam or a laser beam), then radiating the master mask with electromagnetic waves such as light, an X-ray, etc., or with charged particles such as an electron beam, an ion beam, etc. to thereby project

an image of the mask on a wafer. In this case, the writing accuracy of the mask writing tool may be a main cause of the dimension error.--

Please replace the following paragraph beginning on page 11, line 20, with the following text:

--Moreover, subjecting a peripheral portion of a selected unexposed portion to multiple shot exposure can enhance the accuracy of the dimension of the unexposed portion without significantly reducing the throughput. In addition, the present invention enables exposure of a particular portion with no butting portions, thereby enabling forming of a pattern with little edge roughness and remarkable accuracy of dimension.--

IN THE CLAIMS

Please cancel claims 1-13 without prejudice.

Please amend the claims as follows:

15. (Amended) The apparatus according to claim 14, wherein the positioning means causes the second area in which the butting portions of the unit regions are formed, to correspond to an isolation region employed in the semiconductor device.

16. (Amended) The apparatus according to claim 14, wherein the positioning means determines the position of the beam such that the second area in which the predetermined characteristics of the predetermined function are determined by the pattern width of the exposed region corresponds to an active region incorporated in a transistor in the semiconductor device.

17. (Amended) The apparatus according to claim 14, wherein the positioning means determines the position of the beam such that the region in which the predetermined

characteristics of the predetermined function are determined by the pattern width of the exposed region corresponds to an electrode region to which an interlayer contact in the semiconductor device is connected.

REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 14-21 are presently active in this application. The present preliminary amendment cancels claims 1-13.

In view of the foregoing discussion, it is believed that the present application is in condition for a full and thorough examination on the merits. An early and favorable consideration of the present application is hereby respectfully requested.



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Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

A handwritten signature in black ink, appearing to read 'GJ Maier', with a stylized flourish at the end.

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Marked-Up Copy
Serial No: New Application
Amendment Filed on:

IN THE SPECIFICATION

Please replace the following paragraph beginning on page 1, line 24, with the following text:

--[Suppose] Consider the case of forming a device pattern by first forming a master mask (a photomask, an X-ray mask, an electron beam mask, an ion beam mask, etc.) for the device pattern using a mask writing tool (which writes a pattern with an electron beam or a laser beam), then radiating the master mask with electromagnetic [wave] waves such as light, an X-ray, etc., or with charged particles such as an electron beam, an ion beam, etc. to thereby project an image of the mask on a wafer. In this case, the writing accuracy of the mask writing tool may be a main cause of the dimension error.--

Please replace the following paragraph beginning on page 11, line 20, with the following text:

--Moreover, subjecting a peripheral portion of a selected unexposed portion to multiple shot exposure can enhance the accuracy of the dimension of the unexposed portion without significantly reducing the throughput. In addition, the present invention enables exposure of a particular portion with no butting portions, thereby enabling forming of a pattern with [few] little edge roughness and remarkable accuracy of dimension.--

IN THE CLAIMS

15. (Amended) The [method] apparatus according to claim 14, wherein the positioning means causes the second area in which the butting portions of the unit regions are formed, to correspond to an isolation region employed in the semiconductor device.

16. (Amended) The [method] apparatus according to claim 14, wherein the positioning means determines the position of the beam such that the second area in which the predetermined characteristics of the predetermined function are determined by the pattern width of the exposed region corresponds to an active region incorporated in a transistor in the semiconductor device.

17. (Amended) The [method] apparatus according to claim 14, wherein the positioning means determines the position of the beam such that the region in which the predetermined characteristics of the predetermined function are determined by the pattern width of the exposed region corresponds to an electrode region to which an interlayer contact in the semiconductor device is connected.